

What is claimed is:

1. A method for ranking relative risk of a plurality of transactions, wherein each of the transactions has associated therewith a plurality of variables, comprising:
  - 5 assigning a value to each of the variables associated with each of the transactions;
  - aggregating the values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction; and
  - ranking each of the transactions relative to one another based upon the aggregate risk level corresponding to each transaction.

10

2. The method of claim 1, wherein the step of assigning a value to each of the variables associated with each of the transactions further comprises assigning a normalized risk factor value to each of the variables associated with each of the transactions based upon a raw value associated with each of the variables of each of the transactions and wherein the step of aggregating the values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction further comprises aggregating the normalized risk factor values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction.

20

3. The method of claim 2, wherein each value is normalized to a predetermined normalization range.

25

4. The method of claim 3, wherein the predetermined normalization range is between 0 to 1, inclusive.

25

5. The method of claim 4, wherein each variable has associated therewith an operational tolerance and the normalized risk factor value for each variable is calculated using the formula:

$$RF = \xi \bullet (e^{x/\beta} - 1)$$

30

where RF= the normalized risk factor value,  $\xi = 0.5819767069$ ,  $e = 2.718182818$ ,  $x$  = the raw value of the variable, and  $\beta$  = the operational tolerance of the variable.

35

6. The method of claim 5, wherein each variable is selected from the group of quantitative variables and qualitative variables, wherein each variable which is a quantitative variable has associated therewith a raw value corresponding to an actual quantitative value, and wherein each

variable which is a qualitative variable has associated therewith a raw value corresponding to a value selected from a predetermined qualitative value range.

7. The method of claim 6, wherein the predetermined qualitative value range is between 1 to  
5 10, inclusive.

8. The method of claim 6, wherein each quantitative variable is selected from the group including: elapsed time, historical volatility, deviation from average volatility, mark-to-market, trader error ratio, sales error ratio, frequency of notional, outgoing confirm delay/elapsed time, time  
10 to settlement cutoff, and fail recovery time.

9. The method of claim 6, wherein each qualitative variable is selected from the group including: client sensitivity, execution method, client operating infrastructure, incoming confirm  
15 method, outgoing confirm method, internal credit rating, potential OD rates, payment instruction precedence, regulatory risk, master agreement (provisions for netting), country operating infrastructure, liquidity risk, template precedence, and product complexity.

10. The method of claim 2, wherein the step of aggregating the normalized risk factor values assigned to each of the variables on a transaction by transaction basis to produce an aggregate  
20 risk level for each transaction further comprises aggregating the normalized risk factor values using the

formula:

$$AR = \sum_{j=1}^m w_t^j \bullet R_t^j$$

25

where AR= the aggregate risk level,  $w_t^j$  means the weights of the “j”th variable at time “t”, and  $R_t^j$  means the normalized risk factor value of the “j”th variable at time “t”.

11. The method of claim 1, wherein the transactions are ranked relative to one another in  
30 descending order of aggregate risk level.

12. The method of claim 1, wherein the transactions are ranked relative to one another in ascending order of aggregate risk level.

35 13. The method of claim 1, wherein the risk is operational risk.

14. A method for ranking relative risk of a plurality of transactions, wherein each of the transactions has associated therewith a plurality of events and each of the events has associated therewith at least one variable, comprising:

5 assigning a value to each of the variables associated with each of the transactions;

aggregating the values assigned to each of the variables of each event of each transaction to produce a by event aggregate risk level for each event of each transaction;

10 aggregating the by event aggregate risk levels of each transaction to produce a by transaction aggregate risk level for each transaction; and

ranking each of the transactions relative to one another based upon the by transaction

10 aggregate risk level corresponding to each transaction.

15. The method of claim 14, wherein the step of assigning a value to each of the variables

associated with each of the transactions further comprises assigning a normalized risk factor value

15 to each of the variables associated with each of the transactions based upon a raw value associated

with each of the variables of each of the transactions and wherein the step of aggregating the values

assigned to each of the variables of each event of each transaction to produce a by event aggregate

risk level for each event of each transaction further comprises aggregating the normalized risk factor

values assigned to each of the variables of each event of each transaction to produce a by event

aggregate risk level for each event of each transaction.

20 16. The method of claim 15, wherein each value is normalized to a predetermined normalization range.

25 17. The method of claim 16, wherein the predetermined normalization range is between 0 to

1, inclusive.

18. The method of claim 17, wherein each variable has associated therewith an operational tolerance and the normalized risk factor value for each variable is calculated using the formula:

30 
$$RF = \xi \bullet (e^{x/\beta} - 1)$$

where RF= the normalized risk factor value,  $\xi = 0.5819767069$ ,  $e = 2.718182818$ , x = the raw value of the variable, and  $\beta$  = the operational tolerance of the variable.

35 19. The method of claim 18, wherein the operational tolerance associated with a given variable of a given event varies in dependence upon the given event of the transaction.

20. The method of claim 19, wherein each variable is selected from the group of quantitative variables and qualitative variables, wherein each variable which is a quantitative variable has associated therewith a raw value corresponding to an actual quantitative value, and wherein each  
5 variable which is a qualitative variable has associated therewith a raw value corresponding to a value selected from a predetermined qualitative value range.

21. The method of claim 20, wherein the predetermined qualitative value range is between 1 to 10, inclusive.  
10

22. The method of claim 20, wherein each quantitative variable is selected from the group including: elapsed time, historical volatility, deviation from average volatility, mark-to-market, trader error ratio, sales error ratio, frequency of notional, outgoing confirm delay/elapsed time, time to settlement cutoff, and fail recovery time.  
15

23. The method of claim 20, wherein each qualitative variable is selected from the group including: client sensitivity, execution method, client operating infrastructure, incoming confirm method, outgoing confirm method, internal credit rating, potential OD rates, payment instruction precedence, regulatory risk, master agreement (provisions for netting), country operating  
20 infrastructure, liquidity risk, template precedence, and product complexity.

24. The method of claim 15, wherein the step of aggregating the normalized risk factor values assigned to each of the variables of each event of each transaction to produce a by event aggregate risk level for each event of each transaction further comprises aggregating the normalized  
25 risk factor values using the formula:  
25

$$EAR = \sum_{j=1}^m w_t^{j;i} \bullet R_t^{j;i}$$

where EAR= the by event aggregate risk level,  $w_t^{j;i}$  means the weights of the “j”th variable on the  
30 “i”th event at time “t”, and  $R_t^{j;i}$  means the normalized risk factor value of the “j”th variable on the “i”th event at time “t” and wherein the step of aggregating the by event aggregate risk levels of each transaction to produce a by transaction aggregate risk level for each transaction further comprises aggregating the normalized risk factor values and the by event aggregate risk levels using the formula:  
35

$$TAR = \sum_{i=1}^n \sum_{j=1}^m w_t^{j;i} \bullet R_t^{j;i}$$

where TAR= the transaction aggregate risk level,  $w_t^{j;i}$  means the weights of the “j”th variable on the “i”th event at time “t”, and  $R_t^{j;i}$  means the normalized risk factor value of the “j”th variable on the “i”th event at time “t”.

5           25. The method of claim 14, wherein the transactions are ranked relative to one another in  
10          descending order of transaction aggregate risk level.

15           26. The method of claim 14, wherein the transactions are ranked relative to one another in  
              ascending order of transaction aggregate risk level.

20           27. The method of claim 14, wherein each event of each transaction is selected from the  
group including: a) order match; b) broker verification; c) financial confirmation; d) settlement  
confirmation; and e) terms confirmation.

25           28. The method of claim 14, wherein the risk is operational risk.

20           29. A software program for ranking relative risk of a plurality of transactions, wherein each  
of the transactions has associated therewith a plurality of variables, comprising:  
              means for assigning a value to each of the variables associated with each of the transactions;  
              means for aggregating the values assigned to each of the variables on a transaction by  
transaction basis to produce an aggregate risk level for each transaction; and  
              means for ranking each of the transactions relative to one another based upon the aggregate  
risk level corresponding to each transaction.

30           30. The software program of claim 29, wherein the means for assigning a value to each of  
the variables associated with each of the transactions further comprises means for assigning a  
normalized risk factor value to each of the variables associated with each of the transactions based  
upon a raw value associated with each of the variables of each of the transactions and wherein the  
means for aggregating the values assigned to each of the variables on a transaction by transaction  
basis to produce an aggregate risk level for each transaction further comprises means for

aggregating the normalized risk factor values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction.

31. The software program of claim 30, wherein each value is normalized to a predetermined  
5 normalization range.

32. The software program of claim 31, wherein the predetermined normalization range is  
between 0 to 1, inclusive.

10 33. The software program of claim 32, wherein each variable has associated therewith an  
operational tolerance and the normalized risk factor value for each variable is calculated using the  
formula:

$$RF = \xi \bullet (e^{x/\beta} - 1)$$

15 where RF= the normalized risk factor value,  $\xi = 0.5819767069$ ,  $e = 2.718182818$ ,  $x$  = the raw  
value of the variable, and  $\beta$  = the operational tolerance of the variable.

20 34. The software program of claim 33, wherein each variable is selected from the group of  
quantitative variables and qualitative variables, wherein each variable which is a quantitative  
variable has associated therewith a raw value corresponding to an actual quantitative value, and  
wherein each variable which is a qualitative variable has associated therewith a raw value  
corresponding to a value selected from a predetermined qualitative value range.

25 35. The software program of claim 34, wherein the predetermined qualitative value range is  
between 1 to 10, inclusive.

30 36. The software program of claim 34, wherein each quantitative variable is selected from  
the group including: elapsed time, historical volatility, deviation from average volatility, mark-to-  
market, trader error ratio, sales error ratio, frequency of notional, outgoing confirm delay/elapsed  
time, time to settlement cutoff, and fail recovery time.

35 37. The software program of claim 34, wherein each qualitative variable is selected from the  
group including: client sensitivity, execution method, client operating infrastructure, incoming  
confirm method, outgoing confirm method, internal credit rating, potential OD rates, payment  
instruction precedence, regulatory risk, master agreement (provisions for netting), country operating

infrastructure, liquidity risk, template precedence, and product complexity.

38. The software program of claim 30, wherein the means for aggregating the normalized risk factor values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction further comprises means for aggregating the normalized risk factor values using the formula:

$$AR = \sum_{j=1}^m w_t^j \bullet R_t^j$$

10 where AR= the aggregate risk level,  $w_t^j$  means the weights of the “j”th variable at time “t”, and  $R_t^j$  means the normalized risk factor value of the “j”th variable at time “t”.

15 39. The software program of claim 29, wherein the transactions are ranked relative to one another in descending order of aggregate risk level.

40. The software program of claim 29, wherein the transactions are ranked relative to one another in ascending order of aggregate risk level.

20 41. The software program of claim 29, wherein the risk is operational risk.

42. A software program for ranking relative risk of a plurality of transactions, wherein each of the transactions has associated therewith a plurality of events and each of the events has associated therewith at least one variable, comprising:

means for assigning a value to each of the variables associated with each of the transactions;

means for aggregating the values assigned to each of the variables of each event of each

transaction to produce a by event aggregate risk level for each event of each transaction;

means for aggregating the by event aggregate risk levels of each transaction to produce a by transaction aggregate risk level for each transaction; and

means for ranking each of the transactions relative to one another based upon the by transaction aggregate risk level corresponding to each transaction.

43. The software program of claim 42, wherein the means for assigning a value to each of the variables associated with each of the transactions further comprises means for assigning a normalized risk factor value to each of the variables associated with each of the transactions based upon a raw value associated with each of the variables of each of the transactions and wherein the means for aggregating the values assigned to each of the variables of each event of each transaction

to produce a by event aggregate risk level for each event of each transaction further comprises means for aggregating the normalized risk factor values assigned to each of the variables of each event of each transaction to produce a by event aggregate risk level for each event of each transaction.

5

44. The software program of claim 43, wherein each value is normalized to a predetermined normalization range.

10 45. The software program of claim 44, wherein the predetermined normalization range is between 0 to 1, inclusive.

15 46. The software program of claim 45, wherein each variable has associated therewith an operational tolerance and the normalized risk factor value for each variable is calculated using the formula:

$$RF = \xi \bullet (e^{x/\beta} - 1)$$

where RF= the normalized risk factor value,  $\xi = 0.5819767069$ ,  $e = 2.718182818$ ,  $x$  = the raw value of the variable, and  $\beta$  = the operational tolerance of the variable.

20

47. The software program of claim 46, wherein the operational tolerance associated with a given variable of a given event varies in dependence upon the given event of the transaction.

25

48. The software program of claim 47, wherein each variable is selected from the group of quantitative variables and qualitative variables, wherein each variable which is a quantitative variable has associated therewith a raw value corresponding to an actual quantitative value, and wherein each variable which is a qualitative variable has associated therewith a raw value corresponding to a value selected from a predetermined qualitative value range.

30

49. The software program of claim 48, wherein the predetermined qualitative value range is between 1 to 10, inclusive.

35

50. The software program of claim 48, wherein each quantitative variable is selected from the group including: elapsed time, historical volatility, deviation from average volatility, mark-to-market, trader error ratio, sales error ratio, frequency of notional, outgoing confirm delay/elapsed time, time to settlement cutoff, and fail recovery time.

51. The software program of claim 48, wherein each qualitative variable is selected from the group including: client sensitivity, execution method, client operating infrastructure, incoming confirm method, outgoing confirm method, internal credit rating, potential OD rates, payment  
5 instruction precedence, regulatory risk, master agreement (provisions for netting), country operating infrastructure, liquidity risk, template precedence, and product complexity.

52. The software program of claim 43, wherein the means for aggregating the normalized risk factor values assigned to each of the variables of each event of each transaction to produce a by  
10 event aggregate risk level for each event of each transaction further comprises means for aggregating the normalized risk factor values using the formula:

$$EAR = \sum_{j=1}^m w_t^{j;i} \bullet R_t^{j;i}$$

15 where EAR= the by event aggregate risk level,  $w_t^{j;i}$  means the weights of the “j”th variable on the “i”th event at time “t”, and  $R_t^{j;i}$  means the normalized risk factor value of the “j”th variable on the

20 “i”th event at time “t” and wherein the means for aggregating the by event aggregate risk levels of each transaction to produce a by transaction aggregate risk level for each transaction further comprises means for aggregating the normalized risk factor values and the by event aggregate risk levels using the formula:

$$TAR = \sum_{i=1}^n \sum_{j=1}^m w_t^{j;i} \bullet R_t^{j;i}$$

25 where TAR= the transaction aggregate risk level,  $w_t^{j;i}$  means the weights of the “j”th variable on the “i”th event at time “t”, and  $R_t^{j;i}$  means the normalized risk factor value of the “j”th variable on the “I”th event at time “t”.

30 53. The software program of claim 42, wherein the transactions are ranked relative to one another in descending order of transaction aggregate risk level.

54. The software program of claim 42, wherein the transactions are ranked relative to one

another in ascending order of transaction aggregate risk level.

55. The software program of claim 42, wherein each event of each transaction is selected from the group including: a) order match; b) broker verification; c) financial confirmation; d) settlement confirmation; and e) terms confirmation.

56. The software program of claim 42, wherein the risk is operational risk.

57. A system for ranking relative risk of a plurality of transactions, wherein each of the transactions has associated therewith a plurality of variables, comprising:

memory means for storing a software program;

and processing means for processing the software program;

wherein the software program includes:

means for assigning a value to each of the variables associated with each of the transactions;

15 means for aggregating the values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction; and

means for ranking each of the transactions relative to one another based upon the aggregate risk level corresponding to each transaction.

58. The system of claim 57, wherein the means for assigning a value to each of the variables associated with each of the transactions further comprises means for assigning a normalized risk factor value to each of the variables associated with each of the transactions based upon a raw value associated with each of the variables of each of the transactions and wherein the means for aggregating the values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction further comprises means for aggregating the normalized risk factor values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction.

59. The system of claim 58, wherein each value is normalized to a predetermined normalization range.

60. The system of claim 59, wherein the predetermined normalization range is between 0 to 1, inclusive.

61. The system of claim 60, wherein each variable has associated therewith an operational tolerance and the normalized risk factor value for each variable is calculated using the formula:

$$RF = \xi \bullet (e^{x/\beta} - 1)$$

where RF= the normalized risk factor value,  $\xi = 0.5819767069$ ,  $e = 2.718182818$ ,  $x$  = the raw value of the variable, and  $\beta$  = the operational tolerance of the variable.

5        62. The system of claim 61, wherein each variable is selected from the group of quantitative variables and qualitative variables, wherein each variable which is a quantitative variable has associated therewith a raw value corresponding to an actual quantitative value, and wherein each variable which is a qualitative variable has associated therewith a raw value corresponding to a value selected from a predetermined qualitative value range.

10      63. The system of claim 62, wherein the predetermined qualitative value range is between 1 to 10, inclusive.

15      64. The system of claim 62, wherein each quantitative variable is selected from the group including: elapsed time, historical volatility, deviation from average volatility, mark-to-market, trader error ratio, sales error ratio, frequency of notional, outgoing confirm delay/elapsed time, time to settlement cutoff, and fail recovery time.

20      65. The system of claim 62, wherein each qualitative variable is selected from the group including: client sensitivity, execution method, client operating infrastructure, incoming confirm method, outgoing confirm method, internal credit rating, potential OD rates, payment instruction precedence, regulatory risk, master agreement (provisions for netting), country operating infrastructure, liquidity risk, template precedence, and product complexity.

25      66. The system of claim 58, wherein the means for aggregating the normalized risk factor values assigned to each of the variables on a transaction by transaction basis to produce an aggregate risk level for each transaction further comprises means for aggregating the normalized risk factor values using the formula:

$$AR = \sum_{j=1}^m w_t^j \bullet R_t^j$$

30      where AR= the aggregate risk level,  $w_t^j$  means the weights of the "j"th variable at time "t", and  $R_t^j$  means the normalized risk factor value of the "j"th variable at time "t".

35      67. The system of claim 57, wherein the transactions are ranked relative to one another in descending order of aggregate risk level.

68. The system of claim 57, wherein the transactions are ranked relative to one another in ascending order of aggregate risk level.

5        69. The system of claim 57, wherein the risk is operational risk.

70. A system for ranking relative risk of a plurality of transactions, wherein each of the transactions has associated therewith a plurality of events and each of the events has associated therewith at least one variable, comprising:

10        memory means for storing a software program;  
and processing means for processing the software program;  
wherein the software program includes:  
means for assigning a value to each of the variables associated with each of the transactions;  
means for aggregating the values assigned to each of the variables of each event of each  
15 transaction to produce a by event aggregate risk level for each event of each transaction;  
means for aggregating the by event aggregate risk levels of each transaction to produce a by transaction aggregate risk level for each transaction; and  
means for ranking each of the transactions relative to one another based upon the by transaction aggregate risk level corresponding to each transaction.

20        71. The system of claim 70, wherein the means for assigning a value to each of the variables associated with each of the transactions further comprises means for assigning a normalized risk factor value to each of the variables associated with each of the transactions based upon a raw value associated with each of the variables of each of the transactions and wherein the means for  
25 aggregating the values assigned to each of the variables of each event of each transaction to produce a by event aggregate risk level for each event of each transaction further comprises means for aggregating the normalized risk factor values assigned to each of the variables of each event of each transaction to produce a by event aggregate risk level for each event of each transaction.

30        72. The system of claim 71, wherein each value is normalized to a predetermined normalization range.

35        73. The system of claim 72, wherein the predetermined normalization range is between 0 to 1, inclusive.

74. The system of claim 73, wherein each variable has associated therewith an operational

tolerance and the normalized risk factor value for each variable is calculated using the formula:

$$RF = \xi \bullet (e^{x/\beta} - 1)$$

5 where RF= the normalized risk factor value,  $\xi = 0.5819767069$ ,  $e = 2.718182818$ ,  $x$  = the raw value of the variable, and  $\beta$  = the operational tolerance of the variable.

10 75. The system of claim 74, wherein the operational tolerance associated with a given variable of a given event varies in dependence upon the given event of the transaction.

15 76. The system of claim 75, wherein each variable is selected from the group of quantitative variables and qualitative variables, wherein each variable which is a quantitative variable has associated therewith a raw value corresponding to an actual quantitative value, and wherein each variable which is a qualitative variable has associated therewith a raw value corresponding to a value selected from a predetermined qualitative value range.

20 77. The system of claim 76, wherein the predetermined qualitative value range is between 1 to 10, inclusive.

25 78. The system of claim 76, wherein each quantitative variable is selected from the group including: elapsed time, historical volatility, deviation from average volatility, mark-to-market, trader error ratio, sales error ratio, frequency of notional, outgoing confirm delay/elapsed time, time to settlement cutoff, and fail recovery time.

30 79. The system of claim 76, wherein each qualitative variable is selected from the group including: client sensitivity, execution method, client operating infrastructure, incoming confirm method, outgoing confirm method, internal credit rating, potential OD rates, payment instruction precedence, regulatory risk, master agreement (provisions for netting), country operating infrastructure, liquidity risk, template precedence, and product complexity.

35 80. The system of claim 71, wherein the means for aggregating the normalized risk factor values assigned to each of the variables of each event of each transaction to produce a by event aggregate risk level for each event of each transaction further comprises means for aggregating the normalized risk factor values using the formula:

$$EAR = \sum_{j=1}^m w_t^{j;i} \bullet R_t^{j;i}$$

where EAR= the by event aggregate risk level,  $w_t^{j;i}$  means the weights of the “j”th variable on the “i”th event at time “t”, and  $R_t^{j;i}$  means the normalized risk factor value of the “j”th variable on the

“i”th event at time “t” and wherein the means for aggregating the by event aggregate risk levels of each transaction to produce a by transaction aggregate risk level for each transaction further comprises means for aggregating the normalized risk factor values and the by event aggregate risk levels using the formula:

10

$$TAR = \sum_{i=1}^n \sum_{j=1}^m w_t^{j;i} \bullet R_t^{j;i}$$

where TAR= the transaction aggregate risk level,  $w_t^{j;i}$  means the weights of the “j”th variable on the “i”th event at time “t”, and  $R_t^{j;i}$  means the normalized risk factor value of the “j”th variable on the “I”th event at time “t”.

15

81. The system of claim 70, wherein the transactions are ranked relative to one another in descending order of transaction aggregate risk level.

20

82. The system of claim 70, wherein the transactions are ranked relative to one another in ascending order of transaction aggregate risk level.

25

83. The system of claim 70, wherein each event of each transaction is selected from the group including: a) order match; b) broker verification; c) financial confirmation; d) settlement confirmation; and e) terms confirmation.

84. The system of claim 70, wherein the risk is operational risk.